



Series of conferences on **Advances in Representation Theory of Algebras (ARTA)**
Guanajuato-Toruñ-Montréal
Guanajuato, Mexico. June 22-26, 2015.

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TITLE: τ - Tilting modules over one-point extensions by projectives

ABSTRACT:

This is a work in progress.

By algebra we mean a finite dimensional k -algebra over an algebraically closed field k . Recently, Adachi, Iyama and Reiten introduced a generalization of the classical tilting theory, which they called τ -tilting theory. It is well known that the mutation of tilting modules is not always possible. Support τ -tilting modules can be seen as a completion of the class of tilting modules from the point of view of mutation. The authors showed that the mutation of support τ -tilting modules is always possible. In addition, τ -tilting modules satisfy nice properties of tilting modules.

In this talk, we consider an algebra A and the one point extension of A by a projective A -module. The aim of this work is to compare the sets of support τ -tilting modules corresponding to such algebras. Assem, Happel and Trepode studied a similar problem in the context of tilting modules.

We prove that, if we start with a support τ -tilting module over the small algebra, we can extend it to a τ -tilting module over the big one. Conversely, if we start with a support τ -tilting module over the big algebra, we can restrict it to a support τ -tilting module over the small one. That is, under the Restriction and the Extension functors, the support τ -tilting modules are mapped to the support τ -tilting modules. In particular, the same holds for τ -tilting modules. We explore the connection between the posets of support τ -tilting modules in both algebras.